WHAT IS CLAIMED IS:

1. A differential for a wheeled motor vehicle, comprising:

a differential gear unit;

a differential case for housing therein the differential gear unit, the differential case being rotatable about its rotation axis in normal and reverse directions at a position above an oil level of a lubricating oil,

wherein the differential case includes:

a portion having an oil inlet opening formed therethrough, the oil inlet opening communicating the interior of the differential case with the outside of the same; and

an oil dipping up structure that dips up the lubricating oil to force the same to enter the interior of the differential case through the oil inlet opening when the differential case rotates about the rotation axis.

2. A differential as claimed in Claim 1, in which the oil dipping up structure is shaped to force the lubricating oil to enter the differential case when the differential case rotates in the normal direction.

3. A differential as claimed in Claim 2, in which the oil dipping up structure is integral with a major portion of the differential case.

4. A differential as claimed in Claim 2, in which the differential case is produced through a forging technique thereby to have a thinner wall structure.

5. A differential as claimed in Claim 2, in which the oil dipping up structure is shaped to push the lubricating oil toward the oil inlet opening when the differential case rotates in the normal direction.

6. A differential as claimed in Claim 5, in which the oil dipping up structure comprises a first projected portion formed on an outer surface of the differential case, the projected portion having an inclined surface at a leading side thereof with respect to the normal rotation direction, the inclined surface defining an acute angle relative to a tangential line of the outer surface at a center point of the projected portion.

7. A differential as claimed in Claim 6, in which the oil inlet opening is positioned at a leading side of the projected portion with respect to the normal rotation direction.

8. A differential as claimed in Claim 7, in which at least a trailing part of a peripheral edge surface of the oil inlet opening defines an obtuse angle relative to a tangential line of the outer surface at a center point of the oil inlet opening.

9. A differential as claimed in Claim 7, in which a second projected portion is formed on the outer surface of the differential case at a diametrically opposed position of the first projected portion, the second projected portion having substantially the same shape as the first projected portion, and in which another oil inlet opening is formed in the differential case, which is positioned at a leading side of the second projected portion and has substantially the same shape as the oil inlet opening for the first projected portion.

10. A differential as claimed in Claim 6, in which the oil dipping up structure further comprises at least one thicker wall portion provided by the differential case at a trailing position of another oil inlet opening formed in the trailing case, the thicker wall portion having an inclined surface at a leading side thereof with respect to the normal rotation direction, the inclined surface defining an acute angle relative to a tangential line of the outer surface at the inclined surface.

11. A tangential as claimed in Claim 10, in which at least a trailing part of a peripheral edge surface of said another oil inlet opening defines an acute angle relative to a tangential line of the outer surface at a center point of said another oil inlet opening.

12. A tangential as claimed in Claim 2, in which the oil dipping up structure comprises at least one raised up wall portion provided by the differential case at a trailing position of the oil inlet opening with respect to the normal rotation direction, the raised up wall portion having an inclined surface at a leading side thereof with respect to the normal rotation direction, the inclined surface defining an acute angle relative to a tangential line of an outer surface of the differential case at the raised up wall portion.

13. A differential as claimed in Claim 12, in which at least a trailing part of a peripheral edge surface of the oil inlet opening defines an acute angle relative to a tangential line of the outer surface at a center point of the oil inlet opening.

14. A differential as claimed in Claim 13, in which the raised up wall portion is a separate member which is detachably connected to the oil inlet opening.

15. A differential as claimed in Claim 2, in which the oil dipping up structure comprises at least one projected portion formed on an outer surface of the differential case, the projected portion having at its leading side wall with a trailing part of the oil inlet opening.

16. A differential as claimed in Claim 2, in which the oil dipping up structure comprises a corrugated inner surface of a given portion of the differential case, the given portion extending around the rotation axis, each corrugation of the corrugated inner surface being inclined toward the normal rotation direction.

17. A differential as claimed in Claim 16, in which the corrugated inner surface comprises:

a plurality of rounded bank portions that are arranged around the rotation axis defining between adjacent bank portions an oil guide groove that extends radially inward toward the rotation axis, the rounded bank portions being inclined relative to the normal rotation direction;

a plurality of raised portions that are arranged in the path of the rounded bank portions, the raised portion being inclined relative to the normal rotation direction; and

a plurality of guide grooves provided on an annular bearing projection of the differential case, the annular bearing projection bearing a side gear and the guide grooves being inclined relative to the normal rotation direction.

18. A differential as claimed in Claim 17, in which the inclination of each of guide groove defined by the adjacent rounded bank portions is so made that a distance between an outer end of the groove and the rotation axis is greater than a distance between an inner end of the groove and the rotation axis and the outer end is positioned at a leading side with respect to an imaginary line that passes through the inner end and the rotation axis.

19. A differential as claimed in Claim 18, in which the inclination of each raised portion is so made that a distance between an outer end of the raised portion and the rotation axis is greater than a distance between an inner end of the raised portion and the rotation axis and the outer end is positioned at a leading side with respect to an imaginary line that passes through the inner end and the rotation axis.

20. A differential as claimed in Claim 19, in which the inclination of each guide groove is so made that a distance

between an outer end of the groove and the rotation axis is greater than a distance between an inner end of the groove and the rotation axis and the outer end is positioned at a leading side with respect to an imaginary line that passes through the inner end and the rotation axis.

21. A differential as claimed in Claim 2, in which the oil inlet opening is formed in an axial end portion of the differential case, and the oil dipping up structure comprises at least one rib formed on an outer surface of the axial end portion of the differential case, the rib being rushed into the oil level and pulled up from the oil level to dip up and force the lubricating oil to flow toward oil inlet opening when the differential case rotates.

22. A differential as claimed in Claim 21, in which an inner surface of the axis end portion of the differential case is formed with at least one oil guiding path through which the lubricating oil is guided from the oil inlet opening to an annular bearing projection, the annular bearing projection bearing a side gear.

23. A differential as claimed in Claim 24, in which the oil guiding path comprises:

a first guide groove that extends from the oil inlet opening to a recessed end near the annular bearing projection;

a second guide groove formed on a leading end of the annular bearing projection;

a third guide groove formed on a cylindrical outer surface of the annular bearing projection; and

a circular guide groove formed on the leading end of the annular bearing projection.

24. A differential as claimed in Claim 1, in which the differential case is of a split type including a first case half and a second case half which are coupled together.

25. A differential as claimed in Claim 1, in which the differential gear unit is of a type having four pinion gears and two side gears.

26. A differential as claimed in Claim 1, in which the differential gear unit is of a type having two pinion gears and two side gears.

27. A differential case for a differential of a wheeled motor vehicle, comprising:

a case proper;

a portion of the case proper, the portion having an oil inlet opening formed therethrough, the oil inlet opening communicating the interior of the case proper with the outside of the same; and

an oil dipping up structure defined by the case proper, the oil dipping up structure dipping up a lubricating oil to force the same to enter the interior of the case proper through the oil inlet opening when rotated in the lubricating oil about a given rotation axis.

28. A differential case as claimed in Claim 27, in which the oil dipping up structure is shaped to increase the function of forcing the lubricating oil toward the oil inlet opening when the case proper is rotated about the given rotation axis in a normal direction that induces a forward movement of the motor vehicle.

29. A differential case as claimed in Claim 28, in which the case proper is of a split type including a first case half and a second case half which are coupled together.